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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,165	05/01/2001	David A. Atkinson	LTI-PI-355	5640

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EXAMINER

GURZO, PAUL M

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/847.165

Applicant(s)

ATKINSON ET AL.

Examiner

Paul Gurzo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 24 April 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 5, 15, 20-22, 31, and 32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (4,647,772), and further in view of Wesley (4,458,153).

Regarding claims 1, 15, 20-22, 31, and 32, Lewis et al. teach a spectrometry analyzer source comprising an electrically conductive conduit (27), with a discharge end, to receive the sample and an electrically conductive reference device (45) positioned proximate the discharge end of the conduit to allow an electrical potential to be established (col. 4, line 21 - col. 7, line 17 and Fig. 1 and 5). They teach that the mass analyzer employed in the spectrometer may be of any suitable type (col. 5, lines 35-37). They teach strongly heating the nozzle so that vaporization and ionization of at least some of the sample takes place (col. 6, lines 61-64). While it is implied that this happens simultaneously, they do not explicitly state this. However, Wesley states that a spark gap across the electrodes releases a large quantity of energy in a small area that instantaneously vaporizes and ionizes everything in the arc. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Lewis et al. so that this happens simultaneously to increase efficiency.

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Regarding claims 4 and 5, Wesley et al. teach a field generating means disposed adjacent a nonconductive portion of the flow conduit (13), and Fig. 1 shows the claimed opening (col. 3, lines 48-51 and Fig. 1).

Claims 2 and 16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (4,647,772) in view of Wesley (4,458,153), and further in view of Kamo et al. (4,028,617).

While it is known that proper working order will only be achieved through accurate placement of the reference device, the above-applied art is silent to the claimed Paschen distance. However, Kamo et al. teach that the spark discharge that arises between the gap of the two electrodes conforms with Paschen's Law (col. 1, lines 27-36). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to place the reference device at a distance greater than Paschen's distance so that the proper potential can be maintained.

Claims 3, 12, and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (4,647,772) in view of Wesley (4,458,153), and further in view of French et al. (5,345,079).

The above-applied prior art does not explicitly teach the initiation of a corona discharge, but it will occur based on increasing the potential between the electrodes. Further, French et al. teach that additional ionization can be produced using a corona discharge from a needle (214) (col. 13, lines 45-54 and Fig. 18). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to initiate a corona discharge because this will facilitate the vaporization and ionization to produce the analyte ions.

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Claim 6 and 33 - 43 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (4,647,772) in view of Wesley (4,458,153), and further in view of Liang et al. (5,081,397).

Regarding claim 6, the above-applied art does not state the claimed metal, but Liang et al. teach the use of stainless steel electrodes (12) (col. 6, lines 65-66, and Fig.1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use stainless steel to reduce undesired effects of arcing.

Regarding claims 23 - 26, they are obvious matters of design choice in view of the prior art and do not give rise to any new or unexpected results. As such, they are not given patentable weight.

Regarding claims 33 - 43, the above-applied art teaches the limitations as described above, and Liang et al. teach that the potential between the electrodes is often high enough to cause arcing (col. 7, lines 23-26), and it is obvious that this arcing can be continuous.

Claims 7-11, 13, 14, 18, 19, and 27-30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (4,647,772) in view of Wesley (4,458,153), and further in view of Spangler (6,407,382).

Regarding claims 7-10, 18, and 19, Lewis et al. teach the use of a potential generating means capable of maintaining the desired potential of the electrodes and the polarity is typically between 50-500 volts (col. 10, lines 18-24), but they do not teach an electrical circuit to achieve these results. However, Spangler teaches a solid state circuitry for operation as well as a transistor switch to adjust the potential. The discharge is powered by a high voltage power supply (Abstract and col. 7, line 59 - col. 8, line 10).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an electrical circuit because it achieves much the same result as the prior art and is merely a design choice.

Regarding claims 11, 13, and 14, Spangler teaches that the cathode is connected to the low side of the potential, which serves as a floating ground (col. 4, lines 17-20). Spangler also teaches that the electrodes may be rings or grids (col. 8, lines 34-36).

Response to Arguments

Applicant's arguments filed April 24, 2003 have been fully considered but they are not persuasive. Applicant argues that the Lewis reference does not explicitly teach that the rod (27) or plate (45) is conductive and, because the rod and plate are insulated from the ion chamber (11), the rod, plate, and chamber cannot be considered conductive. However, an electrode, by definition, is a conductor used to establish electrical contact as stated by Webster's Collegiate Dictionary, Tenth Edition. Using this definition, the rod (27), which is defined as an electrode (col. 10, line 18), is, in fact, an electrically conductive conduit. Further, the plate (45) will act as an electrically conductive reference device because it applies a potential that is capable of maintaining the electrode at a potential of the same polarity as that of the ions to be analyzed (col. 5, lines 24-34). Therefore, because the plate applies a potential, it will act as a conductive device. Further, even if the rod and plate claimed to be insulated from the ion chamber, it does not automatically mean that they are, by default, not conductive.

Applicant argues that even if the rod and plate could be viewed as conductive, there is still no teaching of an electrically conductive reference device proximate the ion

chamber. First, claim 1 does not claim such a proximate relationship with the ion chamber. Second, Fig. 1 and 5 clearly depict a proximate relationship with the conductive reference device (27 or 45) and the ion chamber (11). Further, the rod (27) will act to receive particulate sample because it is in a proximate relationship with tube (19) that is mounted to a mounting flange of the ion source assembly (col. 9, lines 42-45).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Gurzo whose telephone number is (703) 306-0532. The examiner can normally be reached on M-Thurs. 7:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached on (703) 308-4116. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

PMG
July 1, 2003

